

REMARKS

This Response is being filed in response to the outstanding Final Office Action, dated March 7, 2005, in connection with the above-identified application. Applicants acknowledge with appreciation the telephone conference of September 1, 2005 with Applicants' counsel.

In this Response, Applicants cancel claims 1-4, 6-7, 10-14, 47 and 50, amend claims 48 and 49, and add claims 53, 54, 55, 56 and 57. Applicants cancel and amend the claims solely to expedite prosecution and do not acquiesce to any of the Examiner's rejections. Applicants reserve the option to further prosecute the same or similar claims in the present or a subsequent application.

Further, silence with regard to Examiner's rejection of a dependent claim, when such claim after amendment depends from an independent claim that Applicant considers allowable for reasons provided herein, is not an acquiescence to such rejection of the dependent claim(s), but rather a recognition by Applicant that such previously lodged rejection is moot based on Applicant remarks and/or amendments relative to the independent claim (that Applicant considers allowable) from which the dependent claim(s) depends.

Upon entry of the Amendment, claims 48, 49, and 51-57 are pending in the present application.

The amendment to claims 48 and 49, and new claims 53, 54, 55, 56 and 57, are supported throughout the application. No new matter has been added. In particular, and without limitation, see:

as to claim 48: p. 23, ¶ 2

as to claim 49 and 53: p. 11, ¶¶ 1, 2

as to claim 54: p. 24, ¶ 2

as to claim 55: p. 5, ¶ 3

as to claims 56 and 57: p. 17, ¶ 1 to p. 18, ¶ 1

The Examiner rejected claims 48-51 under 35 U.S.C. § 102(e) as being anticipated by Johnston et al.

The Examiner also rejected claim 52 under 35 U.S.C. § 103(a) as being unpatentable over Johnston in view of Dupuoy. (The Office Action formally lists the claim as being unpatentable “over Wagner in view of Takahashi,” but then discusses Johnston and Dupuoy. We assume therefore that Johnston and Dupuoy are the basis of the rejection.)

Amended Claim 48

In the Office Action, in finding independent claim 48 herein to be anticipated by Johnston, the Examiner asserted that Johnston disclosed all of the limitations of claim 48, including limitation (e). Limitation (e) of claim 48 is: “emulating the use of a click from the mouse to provide an input signal to the system, by providing an input signal in response to the location of the feature in the video image changing by less than a defined amount during a defined period of time.” (Emphasis added.) The Examiner stated that Johnston disclosed that feature at col. 7, lines 35-48.

Applicants do not acquiesce in the Examiner’s rejection of claim 48. However, in order to expedite prosecution Applicants have amended claim 48 to require that the input signal be generated in response to the location of the feature in the video image “*remaining within a defined range* during a defined period of time.” (Emphasis added.) Johnston does not disclose this limitation, and claim 48 as thus amended therefore is not anticipated by Johnston.

The cited excerpt from Johnston disclosed generating a “click” in response to “a **change** in the object image,” and added, “for example, ...when a steady radiation emission is **interrupted** for a predetermined minimum term.” (Emphasis added.) Thus, in the excerpt cited by the Examiner, Johnston discloses generating a “click” of a mouse by reference to *changes* in the image, such as (unlimited) motion, rather than by reference to the image *remaining within a defined range* as is required by limitation (e) of claim 48 as amended herein.

The cited excerpt from Johnston teaches away from the technique for generating a “click” – holding a feature in the image within a defined range – disclosed in the methods herein and claimed in amended claim 48 herein. In the “Summary of the Invention,” Johnston describes the “clicking function” as generating a signal “in response to a **change** in the control object image.”

(Col. 6, ll. 40-45) (Emphasis added.) The Summary of Invention does not suggest generating a “click” in response to a feature in the image *remaining in a defined range* rather than changing or moving an undefined and unlimited amount.

(Johnston discloses generating a “click” by holding anything stationary only in conjunction with a specific *different* embodiment of his invention in which a “control object” *which includes a light source* is used to generate cursor motion. Col. 23, ll. 20-24. Johnston describes this embodiment as a “wand.” Col. 20, ll. 44-53. By contrast, according to amended claim 48 herein it is the location of the user’s feature in the video image that is to remain within a defined range to generate a “click,” not the location of a light source.)

Accordingly, Johnston does not anticipate amended claim 48 herein, and amended claim 48 should be allowed.

Amended Claim 49

It will be appreciated that, in view of the fact that Johnston does not anticipate claim 48 as amended, it also does not anticipate claim 49, which depends from that claim and previously also was rejected as anticipated by Johnston. Accordingly, amended claim 49 should be allowed.

Claims 51 and 52.

It will be appreciated that, in view of the fact that Johnston does not anticipate claim 48 as amended, it also does not anticipate claim 51, which depends from that claim and previously also was rejected as anticipated by Johnston. Similarly, because Johnston does not anticipate claim 48, it and Dupouy together do not render obvious claim 52, which depends from claim 48. Accordingly, claims 51 and 52 should be allowed.

New claims 53 and 54.

New claim 53 is dependent from amended claim 48 through claim 49, and new claim 54 is dependent from amended claim 48 thorough new claim 53. Therefore, because Johnston does not anticipate claim 48 as amended, Johnston does not anticipate claims 53 and 54.

In addition, new claims 53 and 54 are not anticipated by Johnston for a further reason. Even if amended claim 48 were still anticipated by Johnston, which Applicants assert is not the case, new claims 53 and 54 would not be. The reason is that new claim 53 (and therefore new

claim 54 which depends from new claim 53) contain the further limitation that “the feature associated with a systems user includes at least a portion of one of the system user’s *head or face*.” (Emphasis added.)

The Examiner stated that Johnston taught the first limitation of claim 48, “choosing a feature associated with a system user.” (Col. 5, ll. 42-61) That disclosure is in conjunction with a system in which *a finger of the user’s hand* is used as the “cursor control device,” and in which *the user moves the finger* as a control mechanism. Thus, the feature associated with the user chosen in Johnston is the finger, not the head or face as in new claim 53. (See also Col. 9, l. 66 to col. 10, l. 7; col. 10, ll. 32-37; col. 14, ll. 4-8.)

Johnston *teaches away from* using the head, or any portion thereof, as the control device, except in conjunction with attaching an artificial target to the head. *Johnston’s only suggestion that the head could be used for tracking purposes is in conjunction with the use of a reflective device*. Specifically, Johnston teaches that a reflective device may be used to augment the reflection from the user feature (Col. 12, ll. 62-67), and states that such a reflective device may be affixed to the user’s head to create a “head tracker.” (Col. 13, ll. 16-18; col. 17, ll. 23-25; col. 26, ll. 44-45)

While Johnston discloses tracking the finger without using an attached reflective device, *Johnston does not disclose tracking the head without a reflective device attached to the head*. Johnston thus teaches away from the method claimed in claim 53. No reflective devices are required in the method claimed in claim 53, and the head or face (or a portion thereof) is the feature tracked, *not any additional structure attached to the head or face*. It follows that new claim 53 is not anticipated by Johnston, and hence it should be allowed.

Similarly, because new claim 54 depends from new claim 53, it includes the limitations of new claim 53, and hence insofar as new claim 53 is not anticipated by Johnston, new claim 54 cannot be either. Hence new claim 54 should be allowed.

New claim 55.

Similarly, in view of the fact that new claim 55 is dependent from amended claim 48 (through claims 49 and 53), and Johnston does not anticipate claim 48 as amended, Johnston does not anticipate claim 55.

In addition, in view of the fact that new claim 55 depends from new claim 53, new claim 55 is not anticipated or rendered obvious for the reasons set forth above with respect to new claim 53, and it should be allowed as well.

In addition, new claim 55 is not anticipated by Johnston for a further reason. Even if amended claims 48 and 53 were still anticipated by Johnston, which Applicants assert is not the case, new claim 55 would not be. The reason is that claim 55 is further limited to “video images from the video camera [being] formed by *reflection of ambient light* from objects in the video camera field of view including reflection from the feature associated with the system user.” (Emphasis added.)

Johnston teaches the use of special light sources, including specifically monochromatic light sources, and *teaches away* from the use of ambient lighting by explaining that *filters may be employed to filter out ambient light*. In particular, Johnston describes using light sources such as LEDs or IRLEDs for illumination of the subject, and states that these sources are “nearly monochromatic.” Johnston then goes on to explain that “[t]he monochromatic emissions make filtering of ambient relatively wide band light simple and inexpensive.” (Col. 10, ll. 56-65) See also col. 21, ll. 9-11 (“wide band ambient light is preferably attenuated by filters”) By stating that ambient light may be filtered, and encouraging its filtering, Johnston teaches that ambient light is undesirable. Johnston also explains that while the useful image in its device is formed by reflected light from a light source, ambient light reflections also occur *but are not the image of interest*. (Col. 14, ll. 50-64)

Johnston’s teaching that ambient light generally is *not* to be used as the source of illumination is reinforced by its description of another embodiment to provide a remote selection control (i.e., the “click” of a mouse), in which Johnston discloses a device without an integral light source, *but only in conjunction with a special retroreflective target*. (Col. 16, ll. 58-60) In contrast, the methods disclosed herein utilizing ambient light do not require any additional or special light source or reflective or retroreflective target.

Because new claim 55 is not anticipated by Johnston, it should be allowed.

New claims 56 and 57.

New claim 57 is directly dependent from amended claim 48, and new claim 56 is dependent from amended claim 48 through claims 49, 53 and 55. Therefore, because Johnston does not anticipate claim 48 as amended, Johnston does not anticipate claims 56 and 57.

In addition, in view of the fact that new claim 56 depends from new claims 53 and 55, new claim 56 is not anticipated or rendered obvious for the reasons set forth above with respect to new claims 53 and 55, and it should be allowed as well.

In addition, new claims 56 and 57 are not anticipated by Johnston for a further reason. Even if amended claim 48 and new claims 53 and 55 were still anticipated by Johnston, which Applicants assert is not the case, new claims 56 and 57 would not be. Claims 56 and 57 are further limited to:

“the location of the feature in the video image at the given time [being] determined by correlating greyscale intensities of pixels in trial subimages of the video image at the given time, with greyscale intensities of pixels in a subimage including the chosen feature in the video image at the previous time, and selecting the trial subimage of the video image at the given time with the highest correlation to the subimage including the chosen feature in the video image at the previous time.”

In Johnston, the feature of interest is located in the camera field of view by selecting a threshold brightness value, and constructing an image consisting of the pixels with brightness values exceeding that threshold. See col. 6, ll. 1-4 (“signal thresholds to distinguish object images having an intensity above a predetermined threshold intensity”); col. 7, ll. 23-25; col. 12, ll. 10-13, 19-22; col. 14, l. 65 to col. 15, l. 5; col. 21, ll. 3-5, 11-14. The only alternative Johnston suggests is inverting the process, and selecting instead “a negative or dark image.” Col. 15, ll. 6-7. Johnston does not suggest the use of correlation techniques lacking brightness thresholds to locate features.

Since Johnston does not teach or suggest the subject matter of claims 56 and 57, those claims are allowable over Johnston.

Summary

Claim 48, as amended, is allowable. Johnston does not disclose generating an input signal in response to “the location of the feature in the video image *“remaining within a defined range during a defined period of time.”*

Claim 49, as amended, is allowable. It depends from allowable amended claim 48.

Claims 51 and 52 are allowable. They depend from allowable amended claim 48.

Claims 53 and 54 are allowable. They depend from allowable amended claim 48. In addition, Johnston does not disclose “the feature associated with a systems user includes at least a portion of one of the system user’s *head or face.*”

Claim 55 is allowable. It depends from allowable amended claim 48 and allowable new claim 53. In addition, Johnston does not disclose video images formed by “reflection of ambient light” from the feature associated with the user.

Claims 56 and 57 are allowable. Claim 56 depends from allowable claims 48, 53 and 55, and claim 57 depends from allowable claim 48. In addition, Johnston does not disclose “the location of the feature in the video image at the given time [being] determined by correlating greyscale intensities of pixels in trial subimages of the video image at the given time, with greyscale intensities of pixels in a subimage including the chosen feature in the video image at the previous time, and selecting the trial subimage of the video image at the given time with the highest correlation to the subimage including the chosen feature in the video image at the previous time.”

Previously-Submitted Supplemental Information Disclosure Statements

Applicants have previously submitted a Information Disclosure Statement on January 10, 2002, and Supplemental Information Disclosure Statements on January 25, 2002 and March 29, 2002. The Examiner considered the initial IDS in connection with the initial Office Action herein. However, *Applicants have not received any indication that the Examiner has considered the two Supplemental Information Disclosure Statements.*

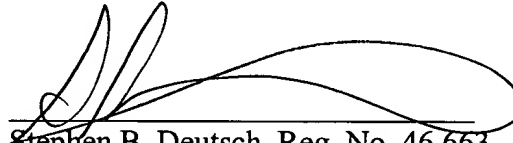
Copies of the Supplemental Information Disclosure Statements are submitted herewith. Applicants respectfully request both be considered. Their initial submission was timely.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants consider the Response herein to be fully responsive to the referenced Office Action, and respectfully submit that the pending claims are in condition for allowance. Early and favorable reconsideration is therefore respectfully solicited. If there are any remaining issues or the Examiner believes that a telephone conversation with Applicants' attorney would be helpful in expediting the prosecution of this application, the Examiner is invited to call the undersigned at 617-832-1118. Should an extension of time be required, Applicants hereby petition for same and request that the extension fee and any other fee required for timely consideration of this application be charged to Deposit Account, No. 06-1448.

Respectfully submitted,

Date: September 6, 2005
Customer No: 25181
Patent Group
Foley Hoag, LLP
155 Seaport Blvd.
Boston, MA 02210-2600



Stephen B. Deutsch, Reg. No. 46,663
Attorney for Applicants
Tel. No. (617) 832-1118
Fax. No. (617) 832-7000